

Appl. No. 10/747,923
Amdt. dated December 23, 2008
Reply to Office Action of November 26, 2008

REMARKS

Applicants' attorney thanks the Examiner for the attention given to the present application. Claims 1 and 3-68 are presented for the Examiner's consideration. Independent claims 1 and 5 have been amended to recite that the hairs do not consist of a spatula or protrusion positioned at the terminal end of the hairs, or the top section of the hairs. Support for this amendment can be found in the Specification at page 7, line 22 and FIG. 2A. Claims 34, 35 and 45 have been amended to correct grammatical errors. Claims 2, 6, 17, 18, 19 and 69 have been canceled. Claims 52-68 are withdrawn.

In the Office Action dated April 25, 2008, the Office rejects claims 1 and 3-51. In addition, in the Office Action dated November 26, 2008, the Examiner states that the reply filed on July 25, 2008, is not fully responsive to the prior Office Action. Applicants are thus resubmitting the reply filed on July 25, 2008, with appropriate modifications to address the Examiner's Office Action dated November 26, 2008.

Pursuant to 37 C.F.R. § 1.111, reconsideration of the present application in view of the foregoing amendments and the following remarks is respectfully requested.

1. Claim 45 was objected to for a grammatical error.

In the Office Action dated April 25, 2008, claim 45 was objected to for a grammatical error. In response, claim 45 has been amended to correct the grammatical error. For at least this reason, Applicants respectfully request that this objection be withdrawn.

2. Claims 1, 3-22, 24-27, 33-46 and 49-51 were rejected under 35 U.S.C. §103(a) as being unpatentable over World Publication No. WO 03/095190 A1 to Fearing et al. ("Fearing").

In the Office Action dated April 25, 2008, claims 1, 3-22, 24-27, 33-46 and 49-51 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing.

With respect to claim 1, the Office believes Fearing teaches a disposable absorbent article comprising a nanofabricated attachment means comprising seta structures 10 disposed on a flexible substrate 16 (Page 6, lines 18-24). The Office believes the hairs 10 are effective to adhesively engage an opposing surface via adhesion of protrusions 14 disposed at the end of setae 10 to the opposing surface, and the opposing surface comprises a polymeric film or fibrous web inasmuch as Fearing teaches that the attachment means can be used as a clothes fastener (Page 21, lines 14, 20).

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With respect to the limitation "wherein the attachment means has a packing density of at least 500 hairs per square millimeter," the Office believes Fearing teaches throughout the disclosure that the instant fastener is mimicking the superior capability of a gecko to adhere to surfaces (especially Page 16, lines 18-20) and that the foot of a gecko has approximately 5,000 setae (i.e., hairs) per square millimeter that collectively achieve a certain adhesive force that allows the gecko to stay secured to the surface (Page 8, lines 27-31). The Office also believes Fearing does not explicitly teach a packing density within the claimed range for setae (hairs) 10. However, the Office believes it would have been obvious to one of ordinary skill in the art to modify the article of Fearing such that the attachment means having hairs 10 thereon has a packing density of 5,000 hairs per square millimeter to achieve the superior adhesion force achieved by the gecko for adhering to other surfaces.

With regard to the limitation "a disposable absorbent article," the Office believes Fearing teaches that the instant fastener material can be used as a clothes fastener. The Office believes Fearing does not explicitly teach a disposable absorbent article. However, the Office believes that since the instant fastener can be used as a clothes fastener, the fastener is considered herein to also be fully capable of functioning as a fastener on a disposable absorbent article. Additionally, the Office believes it would be obvious to one of ordinary skill in the art to use the fastener taught by Fearing as a fastener on an absorbent article with a reasonable expectation of success to provide a fastening means for securing the article in position on the wearer during use. Further, the Office believes the prior art of Fearing thus fairly suggests a disposable absorbent article in combination with the instant fastener, rendering the limitation "a disposable article" obvious.

With regard to claim 3, the Office believes the hairs 10 have an average diameter measured as stalk diameter of between about 50 nanometers (0.05 microns) and 2.0 microns (Page 7, line 4), which falls entirely within the claimed range of about 50 microns or less. The Office believes the hairs 10 have a height in the form of a stalk length that is between 0.5-20 microns (Page 7, lines 3, 4). Therefore, the Office believes the average height-to-diameter ratio of the hair 10 having stalk 12 is $(0.5-20 \text{ microns})/(0.05-2 \text{ microns})$, or 0.1-400, which overlaps and renders obvious the claimed range of about 3 or greater.

With regard to claim 4, the Office believes the hairs 10 are effective to adhesively engage in opposing surface comprising a polymeric film or fibrous web in the form of a clothing surface with

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an average adhesive force of 60-2,000 nanoNewtons via protrusions thereon (Page 7, lines 9-11), which overlaps the claimed range of 10 nanoNewtons or greater per hair.

With regard to claim 5, the Office believes Fearing teaches a disposable absorbent article comprising a gecko-like adhesive fastener including a flexible substrate 16, a plurality of adhesive hairs 10 rising from said substrate. The Office believes the adhesive hairs 10 each have a base section in the form of a shaft, a midsection in the form of a stalk, and a top section. The Office also believes the hairs have a stalk height of between 0.5-20 microns (Page 7, lines 3, 4), which overlaps and renders obvious the claimed range of about 0.5 microns to 8 mm. The Office believes the hairs have an average stalk diameter of between about 50 nanometers (0.05 microns) and 2.0 microns, which falls entirely within the claimed range of about 0.05 microns to about 50 microns.

With regard to claim 6, the Office believes the hairs 10 terminate in a plurality of fine terminating elements in the form of spatulae of hairs 14, inasmuch as the terminating elements 14 are nanoscale elements (Figs. 13A-C, Page 23, 24). The Office believes the term "fine" is described in the disclosure as "approaching the dimensions of gecko setae" (Specification, Page 17, lines 10, 11), which Fearing teaches for the dimensions of the terminating elements 14, as the elements 14 are biomimetic gecko foot hairs (Page 16, line 18).

With regard to claim 7, the Office believes the hairs 10 of Fearing have a stalk height of between 0.5-20 microns (Page 7, lines 3, 4), which overlaps and renders obvious the claimed range of about 2 microns to about 1,000 microns.

With regard to claim 8, the Office believes the hairs 10 of Fearing have an average diameter, measured as stalk diameter, that is between about 50 nanometers (0.05 microns) and 2.0 microns (Page 7, line 4), which falls entirely within the claimed range of about 0.05 microns to about 10 microns.

With regard to claim 9, the Office believes the hairs 10 are spaced apart by a first distance Δ greater than $2 * \text{radius}$ of the stalk 12 of the hair 10, which is equal to the stalk diameter. Thus, the Office believes the hairs 10 are spaced apart by a first distance Δ of between 50 nanometers (0.05 microns) and 2.0 microns (Page 7, line 4), which overlaps and renders obvious the claimed range of about 1 micron to about 1,000 microns.

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With regard to claim 10, the Office believes the hairs 10 are spaced apart by a second distance that is also equal to Δ since Fearing teaches a square lattice arrangement for the hairs 10 (Fig. 3, Page 10, lines 19, 20, 26). Thus, the Office believes the hairs 10 are spaced apart by a second distance, also equal to Δ , of between 50 nanometers (0.05 microns) and 2.0 microns (Page 7, line 4), which overlaps and renders obvious the claimed range of about 1 micron to about 1,000 microns.

With regard to claim 11, the Office believes the ratio of a first distance Δ between said hairs 10 to the diameter of said hairs 10 is greater than 1, since the first distance Δ taught by Fearing is greater than the hair stalk diameter $2r$ (Page 10, lines 25, 26). The Office believes this range overlaps and renders obvious the claimed range of about 3 to about 100.

With regard to claim 12, the Office believes the ratio of a second distance Δ between said hairs to the diameter of said hairs 10 is also greater than 1, sine the second distance Δ is also greater than the hair stalk diameter $2r$, which overlaps the claimed range of about 3 to about 100 (Fig. 3, Page 10, lines 19, 20, 25, 26).

With regard to claim 13, the Office believes the hairs 10 have an average stalk height-to-diameter ratio of (0.5-20 microns)/(0.05-2 microns), i.e. of 0.1-400, which overlaps and renders obvious the claimed range of about 2 to about 1,000 (Page 7, lines 3, 4).

With respect to claim 14, the Office believes that at least one of said hairs 10 taught by Fearing is perpendicular to the plane of said substrate 16 (Fig. 3).

With regard to claim 15, the Office believes that at least one of said hairs 10 is perpendicular to the plane of the substrate and thus is oriented at an angle of 90° to the plane of said substrate, which falls within the claimed range of between 0° and 90° to the plane of said substrate (Fig. 3).

With regard to claim 16, the Office believes that at least one of said hairs 10 is axisymmetric (Fig. 3).

With regard to claim 17, the Office believes that at least one of said hairs 10 has a base in the form of stalk 12 that is axisymmetric and an end portion in the form of spatula 14 that is flattened (Fig. 1A, Page 6, lines 19-21).

With regard to claim 18, the Office believes Fearing teaches that an array of spatulae 14 at the end of a stalk 12 can have between 1 and 1,000 spatulae and is 1 micron wide (Page 7, lines 13, 14).

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Thus, the Office believes the stalk can have one spatulae that is 1 micron wide. The Office also believes Fearing does not teach a thickness for the spatulae. However, the Office believes Fearing teaches alternative structures to the spatulae for terminating elements 14, namely spheres having a radius of 0.15 microns and a length of 1 micron which falls within the disclosed range used to calculate the height to diameter ratio supra for the same embodiment disclosed by Fearing. Further, the Office believes Fearing teaches an $r(\max)$ of between 0.7-1 micron that cannot be exceeded for a length between 1.9-20 microns for the embodiments of Fearing used to reject the claims. The Office believes if the radius exceeds $r(\max)$, the spheres may stick to one another rather than the opposing surface (Page 12, Table 1, lines 8-10). The Office believes that since the radius also serves as a thickness for a sphere, the radius and $r(\max)$ function has an equivalent thickness for a sphere or spatula 14. Additionally, the Office believes that it would be obvious to one of ordinary skill in the art to modify the article of Fearing such that the thickness of the spatulae is equal to an equivalent thickness, which is in turn equal to $r(\max)$ to prevent the spatulae from sticking to one another. The Office believes the ratio of the width of said flattened end to the thickness of said flattened end as fairly suggested by Fearing is thus at least (1 micron)/(0.7-1 micron) or at least about 1 to about 1.4, effectively at least about 1. Further, the Office believes this range overlaps and renders obvious the claimed range of about 2 to about 25.

With regard to claim 19, the Office believes Fearing teaches that the flattened end portion 14, a spatula, has a length that is greater than $9^*(\text{stalk radius})$ to obtain a desired stiffness ratio 100:1 for proper adhesion (Page 10, lines 5-16). Thus, the Office believes the length is greater than 4.5 times the stalk diameter, or greater than between 0.225-9 microns. Therefore, the Office believes the range for the length of the spatula is at least 0.225 microns. The Office believes the stalk length of hair 10 is between 0.5-20 microns (Page 7, lines 3, 4). Therefore, the Office believes the flattened end portion, the spatula, occupies 1.1-45% of the stalk length, i.e., the height of the hair 10. The Office believes this range overlaps and renders obvious the claimed range of about 5 percent to about 80 percent of said height of said hair.

With regard to claim 20, the Office believes Fearing teaches that at least one of the hairs 10 is grown as organic carbon nanotubes, which are hollow. Thus, the Office believes Fearing teaches that at least one of said hairs 10 is hollow (Page 19, lines 9-12).

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With regard to claim 21, the Office believes that at least one hair 10 comprises carbon nanotubes (Page 19, lines 9-12).

With regard to claim 22, the Office believes that the hairs 10 comprise carbon nanotubes, which are cylindrical carbon molecules, i.e., they are molecules with hollow chambers.

With regard to claim 24, the Office believes Fearing teaches a first template for fabrication of the hairs comprising substrate 16 having a first set of micro- or nano-holes, i.e., the substrate 16 is apertured (Page 6, lines 27-30; Page 17, lines 15, 16; Page 18, lines 11-14).

With regard to claim 25, the Office believes the substrate 16 taught by Fearing is comprised of polyester, polyurethane or polyimide, all of which are liquid impervious materials, therefore the substrate 16 is a liquid impervious web.

With regard to claim 26, the Office believes the thickness of said substrate 16 comprises a repeating pattern of thickness variations inasmuch as the substrate contains an array of micro- or nano-holes present in a repeating pattern (Page 6, lines 27-30; Page 17, lines 15, 16; Page 18, lines 11-14).

With regard to claim 27, the Office believes the substrate 16 is apertured inasmuch as it contains micro- or nano-holes (Page 6, lines 27-30; Page 17, lines 15, 16; Page 18, lines 11-14).

With regard to claim 33, the Office believes the substrate 16 taught by Fearing comprises a polyurethane, considered herein to be thermoplastic polyurethane inasmuch as Fearing teaches that substrate 16 is comprised of a flexible or compliant substrate (Col. 6, lines 27-30). The Office believes thermoplastic polyurethane is a thermoplastic elastomer that is flexible and compliant and necessarily comprises regions of elastic material.

With regard to claim 34, the Office believes the substrate 16 taught by Fearing is made solely from thermoplastic polyurethane, thus the substrate 16 is homogenous. The Office believes the substrate 16 is also substantially elastic inasmuch as Fearing teaches that it is comprised of thermoplastic polyurethane, which is a thermoplastic elastomeric material, and is thus also an elastic material (Col. 6, lines 27-30).

With regard to claim 35, the Office believes the substrate 16 taught by Fearing contains discrete elastic regions separated by less elastic regions defined the areas wherein the hairs 10 are

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attached to the substrate 16. The Office believes the polymeric hairs 10 are molded from polymer 54 to the substrate 16 functioning as template 52 (Page 18, lines 23-31), creating an interruption in the substrate surface 16 and thus defining inelastic regions (i.e., less elastic regions when compared to the remainder of the uninterrupted elastic substrate surface). The Office also believes the discrete elastic regions of substrate 16 are thus separated by less elastic regions.

With regard to claim 36, the Office believes the substrate 16 taught by Fearing contains discrete elastic regions separated by less elastic regions defined the areas wherein the hairs 10 are attached to the substrate 16. The Office believes the polymeric hairs 10 are molded from polymer 54 to the substrate 16 functioning as template 52 (Page 18, lines 23-31), creating an interruption in the substrate surface 16 and thus defining inelastic regions. The Office also believes the discrete elastic regions of substrate 16 are thus separated by less elastic regions.

With regard to claim 37, the Office believes the fastener taught by Fearing having the hairs 10 thereon is stretchable because its base material, substrate 16, is stretchable inasmuch as it is made from elastomeric material (Page 6, lines 27-30).

With regard to claim 38, the Office believes the fastener taught by Fearing comprises elastic regions (contributed by the elastic nature of substrate 16) inasmuch as the surface of substrate 16 is elastic but interrupted by inelastic areas where hairs 10 are molded thereto (Page 6, lines 27-30, Page 18, lines 23-31).

With regard to claim 39, the Office believes an attachment surface of said fastener taught by Fearing, i.e. the surface of substrate 16 having the attachment hairs 10 thereon, is elastic inasmuch as the material from which substrate 16 is made is elastomeric and elastic (Col. 6, lines 27-30).

With regard to claim 40, the Office believes the fastener taught by Fearing is used as a clothes fastener, and is thus adapted for fastening to another surface (Page 21, line 20), and is thus necessarily also adapted for fastening said article to itself inasmuch as the adhesive protrusions are capable of engaging other protrusions and the substrate material.

With regard to claim 41, the Office believes the fastener taught by Fearing is used as a clothes fastener, and is thus adapted for fastening said article to another object, namely a surface of an article of clothing (Page 21, line 20).

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With regard to claim 42, the Office believes the fastener taught by Fearing is adapted for joining two or more components of an absorbent article inasmuch as it functions as tape, which is fully capable of joining two or more components in an absorbent article (Page 21, line 14).

With regard to claim 43, the Office believes Fearing teaches that the adhesive microstructures can be used as tape (Page 21, line 14). The Office believes Fearing does not explicitly teach that the instant fastener comprises part of a side seam of an absorbent article. However, the Office believes such tape tab fasteners are well known in the absorbent article art for their use as part of a side seam in such an article to maintain the article in place around the torso of a wearer. Therefore, the Office believes it would be obvious to one of ordinary skill in the art to use the tape fastener taught by Fearing in an absorbent article such that the fastener comprises part of a side seam of said article with a reasonable expectation of success to provide a means for closing the seam such that the article is secured around the waist of a wearer.

With regard to claim 44, the Office believes the fastener taught by Fearing, having said adhesive hairs 10 thereon, comprises a three-dimensional topography characterized by a series of peaks, formed under vacuum before the hairs 10 around the micro- and nano-holes as the vacuum has greater force in and around the holes, and valleys all remaining regions of the substrate (Page 18, lines 23-33).

With regard to claim 45, the Office believes the peaks (formed under vacuum around the micro- and nano-holes as the vacuum has greater force in and around the holes) and valleys (all remaining regions of the substrate) alternate in a first direction (Page 18, lines 23-33).

With regard to claim 46, the Office believes the groups of hairs 10 are selectively disposed on said peaks of said substrate inasmuch as the peaks are formed around the micro- and nano-holes where the hairs are to be molded to the substrate under vacuum when the liquid polymer is molded thereto. The Office believes the hairs 10 are then formed from the liquid polymer 54 (Page 18, lines 23-33).

With regard to claim 49, the Office believes the fastener taught by Fearing comprises substantially hair-free regions between groups of hairs (Figs. 13A-C).

With regard to claim 50, the Office believes the hairs 10 taught by Fearing are disposed substantially uniformly along the fastener on the tops of stalks 50 (Fig. 13A-C).

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With regard to claim 51, the Office believes Fearing does not teach that said hairs are disposed substantially randomly along the fastener. However, the Office believes such a random placement would still effect attachment to another object equally well when compared to the square lattice pattern taught by Fearing. Therefore, the Office believes it would be obvious to one of ordinary skill in the art to modify the fastener of Fearing such that said hairs are disposed substantially randomly along the fastener with a reasonable expectation of success to ensure and maintain the fastener's ability to attach to another object.

a. Claims 1, 3-22, 24-27, 33-46 and 49-51 are not obvious over Fearing under 35 U.S.C. 103(a).

Claim 6 has now been canceled.

Independent claim 1 (and thus dependent claims 3 and 4) recites, among other things, that the attachment means has a packing density of at least 500 hairs per square millimeter. In the Office Action, the Office states that Fearing does not explicitly teach a packing density within the claimed range for setae (hairs) (Office Action dated April 25, 2008, page 3). Applicants agree. However, the Office further states that Fearing teaches that their fastener mimics the "superior capability of gecko to adhere to surfaces ... and that the foot of a gecko has approximately 5,000 setae (i.e. hairs) per square millimeter that collectively achieve a certain adhesive force that allows the gecko to stay secured to the surface" (Id.). The Office then asserts that it would have been obvious to one of ordinary skill in the art to modify the article of Fearing such that the attachment means having hairs thereon has a packing density of 5,000 hairs per square millimeter to achieve the superior adhesion force achieved by the gecko for adhering to other surfaces (Id.). Applicants respectfully disagree. The key statement that the Office makes is that Fearing mimics the capability of a gecko to adhere to surfaces. However, merely because the invention of Fearing has the capability of adhering to a surface, and that a gecko can also adhere to a surface, does not support the contention that the invention of Fearing must have the structural characteristic of a packing density of 5,000 hairs/mm², or even 500 hairs/mm², as the Office contends. Such a statement does not provide sufficient

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evidence to support such a contention by the Office.¹ Thus, the Office has failed to make a *prima facie* case of obviousness with respect to claims 1 and 3-4.

In addition, Applicants have amended independent claims 1 and 5 (and thus their respective dependent claims 3-4 and 7-22, 24-27, 33-46 and 49-51) to recite that the hairs do not consist of a spatula or protrusion positioned at a terminal end of the hairs, or the terminal end of the top section of the hairs. Support for this amendment can be found in the Specification at page 7, line 22 and FIG. 2A. In contrast, Fearing teaches that their invention must have at least one spatula or protrusion at the terminal end (Fearing, Page 6 line 21; Page 7 line 9, and Figs 1A, 1B, 2, 3, 6A, 6B, 9, 11 and 12).^{2,3} One reason that Fearing provides for this requirement is that the spatula or protrusion is necessary for their particular invention to work properly (Fearing, Page 7, lines 10-11). Thus, it would not be obvious to modify Fearing to exclude the spatula or protrusion since Fearing clearly teaches away from doing so, and since such a modification would render Fearing unsatisfactory for its intended purpose according to the teachings of Fearing (see MPEP 2143.01V).

For at least these reasons, Applicants respectfully submit that the rejection of claims 1, 3-5, 7-22, 24-27, 33-46, and 49-51 under 35 U.S.C. §103(a) has been overcome. Applicants respectfully request that this rejection be withdrawn.

3. Claim 23 was rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing in view of “Nanotechnology Providing New Composites,” Reinforced Plastics, Volume 47, Number 10, November 2003, pp.36-39(4) by Borchardt (“Borchardt”).

In the Office Action dated April 25, 2008, claim 23 was rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing in view of Borchardt.

¹ Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness (*KSR v. Teleflex*, 127 S.Ct. 1727, 1741 (U.S. 2007)).

² Fearing does not teach that the stalk can or may have a spatula or protrusion, but rather teaches that it does have a spatula or protrusion (Fearing page 6 line 21 and page 7 line 9).

³ Note that Fearing identifies a spatula or protrusion as an additional spherical structure located at the end of a hair, such as seen in Figures 1B, 3, 5, 6A, 6B, 7A, 7B, 9 and 12 of Fearing, or as an additional block-like structure located at the end of a hair, such as seen in Figure 11 of Fearing. In contrast, amended claims 1, 3-5, 7-22, 24-27, 33-46 and 49-51 of the present invention 1, 3-22, 24-27, 33-46 and 49-51 do not include such a structure.

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With regard to claim 23, the Office believes Fearing teaches oriented structures molded with a wax or silicone rubber kind of material to provide a template and then molded with a polymer as alternate structures for the hairs 10 to the carbon nanotubes. The Office believes fearing does not explicitly teach that the molecule (oriented structure) having a hollow chamber is a cyclodextrin, crown ethers, polyhedral oligomeric silsequioxanes (hereafter, "POSS"), or a combination thereof. Applicants agree. The Office also believes Borchardt teaches that POSS structures reinforce polyesters, polyamides and cellulosic polymers, taught by Fearing as applied to the siloxane (silicone rubber-like material), and increase its glass transition temperature to provide the structural strength of a nanotube while preserving the non-corrosive nature of the polymer thereon. Therefore, the Office believes it would have been obvious to one of ordinary skill in the art to modify the article of Fearing such that the hairs comprise a POSS molecule having a hollow chamber, as taught by Borchardt, to provide a material for the instant hairs that can endure multiple uses of the fastener having the hairs thereon and to prevent risk of corrosion.

a. Claim 23 is not obvious over Fearing in view of Borchardt under 35 U.S.C. 103(a).

The Office appears to be utilizing Borchardt to allegedly teach that POSS structures reinforce polyesters, polyamides and cellulosic polymers, taught by Fearing as applied to the siloxane (silicone rubber-like material), and increase its glass transition temperature to provide the structural strength of a nanotube while preserving the non-corrosive nature of the polymer thereon (Office Action mailed April 25, 2008, page 13). Without addressing the merits of the Examiner's assertion, Applicants respectfully submit that the addition of Borchardt in combination with Fearing does not overcome the deficiencies of Fearing, for at least the reasons discussed above (e.g., a packing density of at least 500 hairs/mm² and/or that the hairs do not consist of a spatula or protrusion positioned at a terminal end of the hairs).

For at least these reasons, Applicants submit that this rejection of claim 23 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

4. Claims 28 and 29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing in view of U.S. Patent No. 4,645,501 issued to Teed ("Teed").

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In the Office Action dated April 25, 2008, claims 28 and 29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing in view of Teed.

With regard to claim 28, the Office believes Fearing does not teach a coated substrate 16. Applicants agree. The Office believes Teed teaches a fastener for an absorbent article comprising a tape fastener coated with adhesive (i.e., a coating) on one surface (Teed, Col. 4, lines 43-46). The Office also believes that since the teachings of Fearing and Teed seek to solve a similar problem in the art (i.e., providing a fastener material for securing one substrate to another), it would be obvious to one of ordinary skill in the art to modify the fastener taught by Fearing so as to comprise a substrate having a coating of adhesive on at least one surface as taught by Teed with a reasonable expectation of success to provide additional means on the instant tape fastener for securing one object to another. The Office believes the combined teaching of Fearing and Teed renders the limitation "wherein said coating is on at least one side of said substrate" obvious.

With regard to claim 29, the Office believes Fearing does not teach a hydrophobic coating on said substrate. Applicants agree. The Office believes Teed teaches a fastener having a coating of polyethylene hot melt adhesive on one surface of said fastener, wherein polyethylene hot melt adhesive is hydrophobic (Teed, Col. 7, lines 11-16). The Office also believes that since the teachings of Fearing and Teed seek to solve a similar problem in the art (i.e., providing a fastener material for securing one substrate to another), it would be obvious to one of ordinary skill in the art to modify the fastener taught by Fearing so as to comprise a substrate having a coating of polyethylene hot melt adhesive on at least one surface as taught by Teed with a reasonable expectation of success to provide additional means on the instant tape fastener for securing one object to another. Further, the Office believes the combined teaching of Fearing and Teed renders the limitation "wherein said coating is hydrophobic" obvious.

a. Claims 28 and 29 are not obvious over Fearing in view of Teed under 35 U.S.C. 103(a).

The Office appears to be utilizing Teed to allegedly teach a fastener for an absorbent article comprising a tape fastener coated with adhesive (i.e., a coating) on one surface, and a fastener having a coating of polyethylene hot melt adhesive on one surface of said fastener, wherein the polyethylene hot melt adhesive is hydrophobic (Office Action mailed April 25, 2008, page 14).

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Without addressing the merits of the Examiner's assertion, Applicants respectfully submit that the addition of Teed in combination with Fearing does not overcome the deficiencies of Fearing, for at least the reasons discussed above.

For at least these reasons, Applicants submit that this rejection of claims 28 and 29 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

5. Claim 30 was rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing in view of U.S. Patent No. 6,350,517 issued to Wu ("Wu").

In the Office Action dated April 25, 2008, claim 30 was rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing in view of Wu.

With regard to claim 30, the Office believes Fearing does not teach that substrate 16 has a hydrophilic coating. Applicants agree. The Office believes Wu teaches an adhesive tape comprising a substrate coated on one surface with hydrophilic acrylic glue (Wu, Col. 2, Example 1, lines 39-42). The Office also believes that since the teachings of Fearing and Wu seek to solve a similar problem in the art (i.e., providing a fastener material for securing one substrate to another), it would be obvious to one of ordinary skill in the art to modify the fastener taught by Fearing so as to comprise a substrate having a coating of hydrophilic acrylic glue on at least one surface as taught by Wu with a reasonable expectation of success to provide additional means on the instant tape fastener for securing one object to another. Further, the Office believes the combined teaching of Fearing and Wu renders the limitation "wherein said coating is hydrophilic" obvious.

a. Claim 30 is not obvious over Fearing in view of Wu under 35 U.S.C. 103(a).

The Office appears to be utilizing Wu to allegedly teach an adhesive tape comprising a substrate coated on one surface with hydrophilic acrylic glue (Office Action mailed April 25, 2008, page 15). Without addressing the merits of the Examiner's assertion, Applicants respectfully submit that the addition of Wu in combination with Fearing does not overcome the deficiencies of Fearing, for at least the reasons discussed above.

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For at least these reasons, Applicants submit that this rejection of claim 30 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

6. Claims 31 and 32 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing in view of U.S. Patent No. 4,716,067 issued to Moji et al. (“Moji”).

In the Office Action dated April 25, 2008, claims 31 and 32 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing in view of Moji.

With regard to claim 31, the Office believes Fearing does not teach a coating on substrate 16 that is a metal oxide. Applicants agree. The Office believes Moji teaches an apertured film with integrated embedded fastener. The Office also believes Moji teaches that the substrate is comprised of titanium that is subsequently anodized, i.e., a titanium dioxide layer, which is a metal oxide layer, is created and thickened on at least one side of the substrate. The Office believes Moji teaches that said substrate and integrated fastener has a high fastener load capability, therefore it would be obvious to one of ordinary skill in the art to modify the article of Fearing to provide a fastener with a high fastener load capability as taught by Moji to ensure that the article is secure during wear (Moji, Col. 3, lines 30-35; Col. 4, lines 9-16). Further, the Office believes the combined teaching of Fearing and Moji renders the limitation “wherein said coating is a metal oxide” obvious.

With regard to claim 32, the Office believes Fearing does not teach a coating on substrate 16 that is a metal oxide. Applicants agree. The Office believes Moji teaches an apertured film with integrated embedded fastener. The Office also believes Moji teaches that the substrate is comprised of titanium that is subsequently anodized, i.e., a titanium dioxide layer, which is a metal oxide layer, is created and thickened on at least one side of the substrate. The Office believes the metal oxide is titanium dioxide treated with a primer in the form of a nitrile phenolic adhesive, which is capable of absorbing UV light. Further, the Office believes the resulting honeycomb substrate layer 15 taught by Moji having titanium dioxide coating treated with UV absorbing adhesive primer is then baked at 200°F, i.e., the substrate 15 having metal oxide coating treated with UV-absorbing material is thermally treated. The Office believes Moji teaches that said substrate and integrated fastener as fabricated according to the instant invention has a high fastener load capability, therefore it would be obvious to one of ordinary skill in the art to modify the article of Fearing to provide a fastener

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with a high fastener load capability as taught by Moji to ensure that the article is secure during wear (Moji, Col. 3, lines 30-35; Col. 4, lines 9-16). The Office also believes the combined teaching of Fearing and Moji renders the limitation “wherein said metal oxide is titanium dioxide treated with a UV absorbing material that is thermally treated” obvious.

a. Claims 31 and 32 are not obvious over Fearing in view of Moji under 35 U.S.C. 103(a).

The Office appears to be utilizing Moji to allegedly teach an apertured film with integrated embedded fastener, and that the substrate is comprised of titanium that is subsequently anodized, i.e., a titanium dioxide layer, which is a metal oxide layer, is created and thickened on at least one side of the substrate (Office Action mailed April 25, 2008, page 15-16). Without addressing the merits of the Examiner’s assertion, Applicants respectfully submit that the addition of Moji in combination with Fearing does not overcome the deficiencies of Fearing, for at least the reasons discussed above.

For at least these reasons, Applicants submit that this rejection of claims 31 and 32 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

7. Claims 47 and 48 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing in view of U.S. Patent No. 5,683,377 issued to Mizutani (“Mizutani”).

In the Office Action dated April 25, 2008, claims 47 and 48 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fearing in view of Mizutani.

With regard to claim 47, the Office believes Fearing does not teach that the hairs are protected from contamination with other materials until pressed into contact with an opposing surface. Applicants agree. The Office believes Mizutani teaches an absorbent article and teaches that it is well known in the absorbent article art to provide release liners that cover adhesive areas defined by the array hairs such as that taught by Fearing to prevent contamination of the adhesive areas with other particles, e.g., dust (Mizutani, Col. 1, lines 9-14). Thus, the Office believes it would be obvious to one of ordinary skill in the art to modify the fastener taught by Fearing so as to have a release sheet thereon as taught by Mizutani to prevent contamination from other particles. The Office also believes the limitation “wherein said hairs are protected from contamination with other

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materials until pressed in contact with an opposing surface" is thus rendered obvious by the combined teaching of Fearing and Mizutani.

With regard to claim 48, the Office believes Fearing does not teach that the hairs are protected with a removable cover. The Office believes Mizutani teaches an absorbent article having a removable cover in the form of a release sheet covering an adhesive area for attaching to an undergarment prior to use (Mizutani, Abstract). The Office also believes Mizutani teaches that it is well known in the absorbent article art to provide release liners that cover adhesive areas defined by the array hairs such as that taught by Fearing to prevent contamination of the adhesive areas with other particles, e.g., dust (Mizutani, Col. 1, lines 9-14). Thus, the Office believes it would be obvious to one of ordinary skill in the art to modify the fastener having hairs thereon taught by Fearing so as to have a release sheet thereon as taught by Mizutani to prevent contamination from other particles. The Office also believes the limitation "wherein said hairs are protected with a removable cover" is thus rendered obvious by the combined teaching of Fearing and Mizutani.

a. Claims 47 and 48 are not obvious over Fearing in view of Mizutani under 35 U.S.C. 103(a).

The Office appears to be utilizing Mizutani to allegedly teach an absorbent article, and to teach that it is well known in the absorbent article art to provide release liners that cover adhesive areas defined by the array hairs such as that taught by Fearing to prevent contamination of the adhesive areas with other particles, e.g., dust, and to teach an absorbent article having a removable cover in the form of a release sheet covering an adhesive area for attaching to an undergarment prior to use (Office Action mailed April 25, 2008, page 17). Without addressing the merits of the Examiner's assertion, Applicants respectfully submit that the addition of Mizutani in combination with Fearing does not overcome the deficiencies of Fearing, for at least the reasons discussed above.

For at least these reasons, Applicants submit that this rejection of claims 47 and 48 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

8. Office Action Dated November 26, 2008.

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In the Office Action dated November 26, 2008, the Examiner states that "the reply filed on July 25, 2008, is not fully responsive to the prior Office Action because of the following omissions or matters: Applicant amended independent claims 1 and 5 to recite that the claimed hairs do not consist of a spatula or protrusion at a terminal end. The claims that have received an office action on the merits are drawn to an embodiment in which the hairs terminate in a plurality of fine terminating elements, which are considered herein to be protrusions at a terminal end of the claimed hair. Thus, claims 1, 3-16 and 20-51 are now constructively non-elected by original presentation."

Applicants respectfully disagree with the Examiner that independent claims 1, 3-5, 7-22, 24-27, 33-46 and 49-51 are drawn to an embodiment in which the hairs terminate in a plurality of fine terminating elements. Such limitation is not present in claims 1, 3-5, 7-22, 24-27, 33-46 and 49-51 (see also footnote 3 above). In fact, the only claim which recites the limitation of an article wherein the hairs terminate in a plurality of fine terminating elements is claim 6. With respect to claim 6, the Examiner states that in Fearing, "the hairs 10 terminate in a plurality of fine terminating elements in the form of spatulae of hairs 14, inasmuch as the terminating elements 14 are nanoscale elements (Figs. 13A-C, Page 23, 24)" (Office Action dated April 25, 2008, page 5). However, a closer reading of Fearing reveals that Figs. 13A-C do not show the fabricated microstructure of Fearing, but rather shows a mold for making such structures (Fearing page 18 lines 23-31). Thus, Applicants respectfully submit that the Examiner has not shown that Fearing teaches or suggests an article wherein the hairs terminate in a plurality of fine terminating elements. However, in order to progress prosecution of the present application, Applicants have canceled claim 6.

9. Timely Response.

The shortened statutory period for replying to the Office Action dated July 25, 2008, was 3 months. Thus, the previous Response timely filed on July 25, 2008. The period for replying to the Office Action dated December 26, 2008, is 1 month. Thus, this Response is timely filed on December 23, 2008.

10. Conclusion.

For the reasons stated above, it is respectfully submitted that all of the presently presented claims are in form for allowance. Applicants intend to be fully responsive to the outstanding Office Action. If the Examiner detects any issue which the Examiner believes Applicants have not

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addressed in this Response, Applicants' undersigned attorney respectfully requests a telephone interview with the Examiner.

The Applicants sincerely believe that this Patent Application is now in condition for allowance and, thus, respectfully request allowance.

The Commissioner is hereby authorized to charge any prosecutorial fees (or credit any overpayment) associated with this communication to Kimberly-Clark Worldwide, Inc. deposit account number 11-0875. If a fee is required for an extension of time under 37 C.F.R. 1.136 not accounted for above, such extension is requested and should also be charged to our Deposit Account.

The undersigned may be reached at: (920) 721-4405.

Respectfully submitted,

JEFFREY D. LINDSAY ET AL.

By



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CERTIFICATE OF TRANSMISSION

I, Lanette Burton, hereby certify that on December 23, 2008, this document is being facsimile transmitted to the United States Patent and Trademark Office, Fax No. (571) 273-8300.



Lanette Burton